INDEX TO VOLUME LI.

ACID, amino-, nitrogen content of the blood, studies on, 121
——, ——, —— in blood, new colorimetric method for the determination, 377
——, ——, —— —— normal urine, colorimetric determination, 393
——, carbon dioxide, and oxygen in blood, interactions, 359
——, carbonic, and bicarbonate in urine, 295
——, homogentisic, in urine, colorimetric method for the determination, 453
——, uric, in blood, determination, 187
Acids, amino-, in cow's milk, 165
——, ——, retention and distribution, with especial reference to the urea formation, 395
——, phenylacetic and phenylpropionic, on the distribution of nitrogen in the urine, influence, 141
——, unsaturated fatty, of egg lecithin, 507
——, —— ——, —— liver lecithin, 285
Adsuki bean, *Phaseolus angularis*, chemical study of the proteins, 103
Amino-acid nitrogen content of the blood, studies on, 121
—— —— in blood, new colorimetric method for the determination, 377
—— —— —— normal urine, colorimetric determination, 393
Amino-acids in cow's milk, 165
——, retention and distribution, with especial reference to the urea formation, 395
Ammonia content of blood, note on, 183
—— in blood and in organic fluids, micro method for the estimation, 367
Analyses, separate, of the corpuscles and of the plasma, 21
Analysis, blood, a system, 377
——, ——, note on the necessity of checking up the quality of sodium tungstate used in the system, 419
ARAI, MINORU. See OKADA and ARAI, 135
Artichoke tubers, preparation of inulin with special reference to, as a source, 275
Asparagus officinalis L., carbohydrate content of the seed, 93

BARTLETT, H. H. See CAKE and BARTLETT, 93
Base, total, in urine, method for the estimation, 55
Bean, adsuki, *Phaseolus angularis*, chemical study of the proteins, 103
——, soy, the coconut, and cottonseed meal, nitrogen distribution of proteins extracted by 0.2 per cent sodium hydroxide solution from, 17
BEELER, CAROL. See WILDER, BOOTHBY, and BEELER, 311
BENEDICT, STANLEY R. The determination of uric acid in blood, 187
——. See NASH and BENEDICT, 183
BERGLUND, HILDING. See FOLIN and BERGLUND, 209, 213, 395
Bicarbonate and carbonic acid in urine, 295

XUM

Biological test, delicate, for calcium-depositing substances, 41
Bios and water-soluble B in yeast growth, 77
Blood, amino-acid nitrogen in, new colorimetric method for the determination, 377
——, ammonia content of, note on, 183
—— analysis, sodium tungstate used in the system of, note on the necessity of checking up the quality, 419
—— ——, system, 377
——, chlorides in, clinical method for the estimation, 115
——, coagulation, comparison between the effects of the stroma of erythrocytes and of tissue extracts, unheated and heated, on, and on the mechanism of the interaction of these substances with blood serum, 485
——, ——, interaction between blood serum and tissue extract in, 461, 485
——, determination of uric acid in, 187
——, free and bound water in, 435
——, interactions of oxygen, acid, and carbon dioxide in, 359
—— and organic fluids, ammonia in, micro method for the estimation of, 367
——, secretions, and tissues, micro urease method for the estimation of urea in, 373
—— serum, mechanism of the interaction of stroma of erythrocytes and of tissue extracts with, and comparison between the effects of these substances, unheated and heated, on the coagulation of the blood, 485
—— —— and tissue extract, interaction between, in the coagulation of the blood, 461, 485
Blood, studies on the amino-acid nitrogen content, 121
Boothby, Walter M. See Wilder, Boothby, and Beeler, 311
Briggs, A. P. A colorimetric method for the determination of homogentisic acid in urine, 453
Buckner, G. D., Martin, J. H., Pierce, W. C., and Peter, A. M. Calcium in egg-shell formation, 51

Cake, W. E., and Bartlett, H. H. The carbohydrate content of the seed of *Asparagus officinalis* L., 93
Calcium in egg-shell formation, 51
—— -depositing substances, a delicate biological test for, 41
Carbohydrate content of the seed of *Asparagus officinalis* L., 93
—— metabolism, studies in, 11
Carbohydrates, transportation, retention, and excretion, some new observations and interpretations with reference to, 213
Carbon dioxide, effect of loss on the hydrogen ion concentration of urine, 3
—— ——, oxygen, and acid in blood, interactions, 359
Carbonic acid and bicarbonate in urine, 295
Cellular metabolism, influence of putrefaction products on, 141
Chemical study of the proteins of the adsuki bean, *Phaseolus angularis*, 103
Chlorides in blood, clinical method for the estimation, 115
Clark, E. P. Note on the preparation of mannose, 1
Cleavage products of the crystalline lens, 155
Clinical method for the estimation of chlorides in blood, 115

Coagulation of blood, comparison between the effects of the stroma of erythrocytes and of tissue extracts, unheated and heated, on, and on the mechanism of the interaction of these substances with blood serum, 485
—— —— ——, interaction between blood serum and tissue extract in, 461, 485
Coconut, cottonseed, and the soy bean, nitrogen distribution of proteins extracted by 0.2 per cent sodium hydroxide solution from, 17
Colorimetric determination of the amino-acid nitrogen in normal urine, 393
—— method for the determination of homogentisic acid in urine, 453
—— —— —— —— determination of sugars in normal human urine, 209
—— ——, new, for the determination of the amino-acid nitrogen in blood, 377
—— ——, ——, for the determination of plasma proteins, 33
—— methods for the separate determination of tyrosine, tryptophane, and cystine in proteins, 421
Corpuscles and plasma, separate analyses, 21
Cottonseed meal, the soy bean, and the coconut, nitrogen distribution of proteins extracted by 0.2 per cent sodium hydroxide solution from, 17
Crystalline lens, cleavage products of, 155
Cystine, tyrosine, and tryptophane in proteins, colorimetric methods for the separate determination, 421

DETERMINATION, colorimetric, of the amino-acid nitrogen in normal urine, 393
——, gasometric, of urea, note on, 89
—— of the amino-acid nitrogen in blood, new colorimetric method for, 377
—— —— ammonia in blood and in organic fluids, micro method for, 367
—— —— chlorides in blood, clinical method for, 115
—— —— homogentisic acid in urine, colorimetric method for, 453
—— —— plasma proteins, new colorimetric method for, 33
—— —— sugars in normal human urine, colorimetric method for, 209
—— —— total base in urine, method for, 55
—— —— urea in blood, secretions, and tissues, micro urease method for, 373
—— —— uric acid in blood, 187
——, separate, of tyrosine, tryptophane, and cystine in proteins, colorimetric methods for, 421
Diabetes, phlorhizin, kidney factor in, 171
——, studies of the metabolism of, 311

EDDY, WALTER H., HEFT, H. L., and STEVENSON, H. C. A reply to Fulmer, Nelson, and Sherwood concerning Medium F, 83
Egg lecithin, unsaturated fatty acids of, 507
—— -shell formation, calcium in, 51
Erythrocytes, stroma of, and tissue extracts, unheated and heated, comparison between the effects of, on the coagulation of the blood, and on the mechanism of the interaction of these substances with blood serum, 485

Excretion, urinary sugar, in twenty-six individuals, study, 11
Extract, tissue, and blood serum, interaction between, in the coagulation of the blood, 461, 485
——, ——, —— serum, combined action of, on fluoride, hirudin, and peptone plasma; effect of heating on the serum, 461
——, ——, —— stroma of erythrocytes, unheated and heated, comparison between the effects of, on the coagulation of the blood, and on the mechanism of the interaction of these substances with blood serum, 485

FAT-SOLUBLE vitamine, 63
—— —— with yellow plant pigments, further observations on the occurrence, 63
Fatty acids, unsaturated, of egg lecithin, 507
—— ——, ——, of liver lecithin, 285
FINKS, A. J. See JONES, FINKS, and GERSDORFF, 103
FISKE, CYRUS H. A method for the estimation of total base in urine, 55
FLEISHER, MOYER S. See LOEB, FLEISHER, and TUTTLE, 461, 485
Fluids, organic, and blood, micro method for the estimation of ammonia in, 367
Fluoride, hirudin, and peptone plasma, combined action of serum and tissue extract on; effect of heating on the serum, 461
FOLIN, OTTO. A colorimetric determination of the amino-acid nitrogen in normal urine, 393
——. Note on the necessity of checking up the quality of sodium tungstate used in the system of blood analysis, 419
FOLIN, OTTO. A system of blood analysis. Supplement III. A new colorimetric method for the determination of the amino-acid nitrogen in blood, 377
—— and BERGLUND, HILDING. A colorimetric method for the determination of sugars in normal human urine, 209
—— and ——. The retention and distribution of amino-acids with especial reference to the urea formation, 395
—— and ——. Some new observations and interpretations with reference to transportation, retention, and excretion of carbohydrates, 213
—— and LOONEY, JOSEPH M. Colorimetric methods for the separate determination of tyrosine, tryptophane, and cystine in proteins, 421
FRIEDEMANN, W. G. The nitrogen distribution of proteins extracted by 0.2 per cent sodium hydroxide solution from cottonseed meal, the soy bean, and the coconut, 17
FRIEND, HERMAN. Clinical method for the estimation of chlorides in blood, 115
FULMER, ELLIS I., and NELSON, VICTOR E. Water-soluble B and bios in yeast growth, 77

GAD-ANDRESEN, K. L. A micro method for the estimation of ammonia in blood and in organic fluids, 367
——. A micro urease method for the estimation of urea in blood, secretions, and tissues, 373
GAMBLE, JAMES L. Carbonic acid and bicarbonate in urine, 295
Gasometric determination of urea, note on, 89

GERSDORFF, CHARLES E. F. See JOHNS and GERSDORFF, 439
——. See JONES, FINKS, and GERSDORFF, 103
Growth, yeast, water-soluble B and bios in, 77

HAYASHI, TOWORU. See OKADA and HAYASHI, 121
HEFT, H. L. See EDDY, HEFT, and STEVENSON, 83
HIJIKATA, YOSHIZUMI. Do the amino-acids occur in cow's milk, 165
——. The influence of putrefaction products on cellular metabolism. II. On the influence of phenylacetic and phenylpropionic acids on the distribution of nitrogen in the urine, 141
——. On the cleavage products of the crystalline lens, 155
HILL, A. V. The interactions of oxygen, acid, and CO_2 in blood, 359
Hirudin, peptone, and fluoride plasma, combined action of serum and tissue extract on; effect of heating on the serum, 461
Homogentisic acid in urine, colorimetric method for the determination, 453
Hydrogen ion concentration of the intestinal contents, 135
—— —— —— —— urine, effect of loss of carbon dioxide on, 3
Hydroxide solution, sodium, from cottonseed meal, the soy bean, and the coconut, nitrogen distribution of proteins extracted by 0.2 per cent, 17
Hypobromite reaction on urea, 87

INTESTINAL contents, hydrogen ion concentration, 135
Inulin, preparation with special reference to artichoke tubers as a source, 275

JOHNS, CARL O., and GERSDORFF, CHARLES E. F. The proteins of the tomato seed, *Solanum esculentum*, 439
JONES, D. BREESE, FINKS, A. J., and GERSDORFF, C. E. F. A chemical study of the proteins of the adsuki bean, *Phaseolus angularis*, 103

KIDNEY factor in phlorhizin diabetes, 171

LECITHIN, egg, unsaturated fatty acids of, 507
——, liver, unsaturated fatty acids, 285
Lens, crystalline, cleavage products, 155
LEVENE, P. A., and ROLF, IDA P. The unsaturated fatty acids of egg lecithin, 507.
—— and SIMMS, H. S. The unsaturated fatty acids of liver lecithin, 285
Liver lecithin, unsaturated fatty acids, 285
LOEB, LEO, FLEISHER, MOYER S., and TUTTLE, LUCIUS. The interaction between blood serum and tissue extract in the coagulation of the blood. I. The combined action of serum and tissue extract on fluoride, hirudin, and peptone plasma; The effect of heating on the serum, 461. II. A comparison between the effects of the stroma of erythrocytes and of tissue extracts, unheated and heated, on the coagulation of the blood, and on the mechanism of the interaction of these substances with blood serum, 485
LOONEY, JOSEPH M. See FOLIN and LOONEY, 421

MANNOSE, note on the preparation, 1
MARSHALL, E. K., JR. The effect of loss of carbon dioxide on the hydrogen ion concentration of urine, 3
MARTIN, J. H. See BUCKNER, MARTIN, PIERCE, and PETER, 51
McCOLLUM, E. V., SIMMONDS, NINA, SHIPLEY, P. G., and PARK, E. A. Studies on experimental rickets. XVI. A delicate biological test for calcium-depositing substances, 41
Medium F, reply to Fulmer, Nelson, and Sherwood concerning, 83
MENAUL, PAUL. The hypobromite reaction on urea, 87
Metabolism, carbohydrate, studies in, 11
——, cellular, influence of putrefaction products on, 141
—— of diabetes, studies of the, 311
Method, clinical, for the estimation of chlorides in blood, 115
——, colorimetric, for the determination of homogentisic acid in urine, 453
——, ——, —— —— determination of sugars in normal human urine, 209
—— for the estimation of total base in urine, 55
——, micro, for the estimation of ammonia in blood and in organic fluids, 367
——, —— urease, for the estimation of urea in blood, secretions, and tissues, 373
——, new colorimetric, for the determination of the amino-acid nitrogen in blood, 377
——, —— ——, —— the determination of plasma proteins, 33
Methods, colorimetric, for the separate determination of tyrosine, tryptophane, and cystine in proteins, 421
Micro method for the estimation of ammonia in blood and in organic fluids, 367
—— urease method for the estimation of urea in blood, secretions, and tissues, 373
Milk, cow's. amino-acids in, 165

NASH, THOMAS P., JR. The kidney factor in phlorhizin diabetes, 171
—— and BENEDICT, STANLEY R. Note on the ammonia content of blood, 183
NELSON, VICTOR E. See FULMER and NELSON, 77
NEUHAUSEN, BENJAMIN S. Free and bound water in the blood, 435
NEUWIRTH, ISAAC. Studies in carbohydrate metabolism. III. A study of urinary sugar excretion in twenty-six individuals, 11
Nitrogen, amino-acid, content of the blood, studies on, 121
——, ——, in blood, new colorimetric method for the determination, 377
——, ——, —— normal urine, colorimetric determination, 393
—— distribution in the urine, influence of phenylacetic and phenylpropionic acids on, 141
—— —— of proteins extracted by 0.2 per cent sodium hydroxide solution from cottonseed meal, the soy bean, and the coconut, 17

OKADA, SEIZABURO, and ARAI, MINORU. The hydrogen ion concentration of the intestinal contents, 135
—— and HAYASHI, TOWORU. Studies on the amino-acid nitrogen content of the blood, 121

Organic fluids and blood, ammonia in, micro method for the estimation of, 367
Oxygen, acid, and CO_2 in blood, interactions, 359

PARK, E. A. See McCOLLUM, SIMMONDS, SHIPLEY, and PARK, 41
Peptone, fluoride, and hirudin plasma, combined action of serum and tissue extract on; effect of heating on the serum, 461
PETER, A. M. See BUCKNER, MARTIN, PIERCE, and PETER, 51
Phaseolus angularis, adsuki bean, chemical study of the proteins, 103
Phenylacetic and phenylpropionic acids on the distribution of nitrogen in the urine, influence, 141
Phenylpropionic and phenylacetic acids on the distribution of nitrogen in the urine, influence, 141
Phlorhizin diabetes, kidney factor in, 171
Photosynthesis, relation to the production of vitamine A in plants, 455
PIERCE, W. C. See BUCKNER, MARTIN, PIERCE, and PETER, 51
Pigments, yellow plant, further observations on the occurrence of the fat-soluble vitamine with, 63
Plant pigments, yellow, further observations on the occurrence of the fat-soluble vitamine with, 63
Plants, vitamine A in, relation of photosynthesis to the production, 455
Plasma and corpuscles, separate analyses, 21
——, fluoride, hirudin, and peptone, combined action of serum and tissue extract on; effect of heating on the serum, 461
—— proteins, new colorimetric method for the determination, 33
Proteins, colorimetric methods for the separate determination of tyrosine, tryptophane, and cystine in, 421
——, nitrogen distribution of, extracted by 0.2 per cent sodium hydroxide solution from cottonseed meal, the soy bean, and the coconut, 17
—— of the adsuki bean, *Phaseolus angularis*, chemical study, 103
———— tomato seed, *Solanum esculentum*, 439
——, plasma, new colorimetric method for the determination, 33
Putrefaction products on cellular metabolism, influence, 141

REACTION, hypobromite, on urea, 87
Rickets, studies on experimental, 41
ROLF, IDA P. See LEVENE and ROLF, 507

SECRETIONS, tissues, and blood, micro urease method for the estimation of urea in, 373
Seed of *Asparagus officinalis* L., carbohydrate content, 93
——, tomato, *Solanum esculentum*, proteins, 439
SELL, MARIANA T. See STEENBOCK and SELL, 63
Serum, blood, mechanism of the interactions of stroma of erythrocytes and of tissue extracts with, and comparison between these substances, unheated and heated,. on the coagulation of the blood, 485

Serum, blood, and tissue extract, interaction between, in the coagulation of the blood, 461, 485
——, effect of heating on; combined action of serum and tissue extract on fluoride, hirudin, and peptone plasma, 461
—— and tissue extract, combined action of, on fluoride, hirudin, and peptone plasma; the effect of heating on the serum, 461
SHIPLEY, P. G. See MCCOLLUM, SIMMONDS, SHIPLEY, and PARK, 41
SIMMONDS, NINA. See MCCOLLUM, SIMMONDS, SHIPLEY, and PARK, 41
SIMMS, H. S. See LEVENE and SIMMS, 285
Sodium hydroxide solution from cottonseed meal, the soy bean, and the coconut, nitrogen distribution of proteins extracted by 0.2 per cent, 17
—— tungstate used in the system of blood analysis, note on the necessity of checking up the quality, 419
Solanum esculentum, tomato seed, proteins, 439
Solution, 0.2 per cent sodium hydroxide, from cottonseed meal, the soy bean, and the coconut, nitrogen distribution of proteins extracted by, 17
Soy bean, the coconut, and cottonseed meal, nitrogen distribution of proteins by 0.2 per cent sodium hydroxide solution from, 17
STEENBOCK, H., and SELL, MARIANA T. Fat-soluble vitamine. X. Further observations on the occurrence of the fat-soluble vitamine with yellow plant pigments, 63
STEHLE, RAYMOND L. Note on the gasometric determination of urea, 89
STEVENSON, H. C. See EDDY, HEFT, and STEVENSON, 83
Stroma of erythrocytes and tissue extracts, unheated and heated, comparison between the effects of, on the coagulation of the blood, and on the mechanism of the interaction of these substances with blood serum, 485
Sugar excretion, urinary, in twenty-six individuals, study, 11
Sugars in normal human urine, determination by a colorimetric method, 209

TEST, delicate biological, for calcium-depositing substances, 41
Tissue extract and blood serum, interaction between, in the coagulation of the blood, 461, 485
—— —— —— serum, combined action of, on fluoride, hirudin, and peptone plasma; the effect of heating on the serum, 461
—— extracts and stroma of erythrocytes, unheated and heated, comparison between the effects of, on the coagulation of the blood, and on the mechanism of the interaction of these substances with blood serum, 485
Tissues, blood, and secretions, micro urease method for the estimation of urea in, 373
Tomato seed, *Solanum esculentum*, proteins, 439
Tryptophane, cystine, and tyrosine in proteins, colorimetric methods for the separate determination, 421
Tubers, artichoke, preparation of inulin with special reference to, as a source, 275

Tungstate, sodium, used in the system of blood analysis, note on the necessity of checking up the quality, 419
Tuttle, Lucius. See Loeb, Fleisher, and Tuttle, 461, 485
Tyrosine, tryptophane, and cystine in proteins, colorimetric methods for the separate determination, 421

Urea formation, retention and distribution of amino-acids with especial reference to, 395
——, gasometric determination of, note on, 89
——, hypobromite reaction on, 87
—— in blood, secretions, and tissues, micro urease method for the estimation, 373
Urease method, micro, for the estimation of urea in blood, secretions, and tissues, 373
Uric acid in blood, determination, 187
Urinary sugar excretion in twenty-six individuals, study, 11
Urine, carbonic acid and bicarbonate in, 295
——, colorimetric method for the determination of homogentisic acid in, 453
——, hydrogen ion concentration of, effect of loss of carbon dioxide on, 3
——, influence of phenylacetic and phenylpropionic acids on the distribution of nitrogen in, 141
——, normal, colorimetric determination of amino-acid nitrogen in, 393
Urine, normal, human, colorimetric method for the determination of sugars in, 209
——, total base in, method for the estimation, 55

Vitamine A in plants, relation of photosynthesis to the production, 455
——, fat-soluble, 63
——, —— with yellow plant pigments, further observations on the occurrence, 63

Water, free and bound, in the blood, 435
—— -soluble B and bios in yeast growth, 77
Wilder, Russell M., Boothby, Walter M., and Beeler, Carol. Studies of metabolism in diabetes, 311
Willaman, J. J. The preparation of inulin, with special reference to artichoke tubers as a source, 275
Wilson, J. Walter. The relation of photosynthesis to the production of vitamine A in plants, 455
Wu, Hsien. A new colorimetric method for the determination of plasma proteins, 33
——. Separate analyses of the corpuscles and the plasma, 21

Yeast growth, water-soluble B and bios in, 77